AMENDMENTS TO THE CLAIMS

A detailed listing of all claims that are, or were, in the present application, irrespective of whether the claim(s) remains under examination in the application are presented below. The claims are presented in ascending order and each includes one status identifier. Those claims not cancelled or withdrawn but amended by the current amendment utilize the following notations for amendment: 1) deleted matter is shown by strikethrough for six or more characters and double brackets for five or less characters; and 2) added matter is shown by underlining.

1. (Currently amended) An electric parking brake system for a vehicle, comprising:

an actuator, which includes an electric motor and an output shaft, wherein the output shaft is reciprocated by the electric motor;

a frictional member, which is capable of approaching and separating from a rotor that integrally rotates with a wheel of the vehicle, wherein the output shaft presses the frictional member against the rotor such that the frictional member applies brake to the wheel with a predetermined baking force;

a drive circuit, which supplies a voltage to the electric motor to drive the electric motor; and

a controller for controlling the drive circuit, wherein, when applying the parking brake, ~~for a predetermined period that is required for the frictional member to generate the predetermined braking force,~~ the controller causes the drive circuit to supply a predetermined constant voltage to the electric motor for a first predetermined period that is required for the frictional member to generate the predetermined braking force, and wherein, after the first predetermined period has elapsed, the controller causes the drive circuit to supply a re-pressing voltage, which is determined based on a temperature of the electric motor, to the electric motor for a second predetermined period.

2. (Currently amended) The electric parking brake system according to claim 1, wherein the controller determines the first predetermined period based on a state of the vehicle.

3. (Original) The electric parking brake system according to claim 2, wherein the state of the vehicle includes an inclination angle of the vehicle.

4. (Currently amended) The electric parking brake system according to claim 3, further comprising an inclination angle sensor for detecting the inclination angle of the vehicle, and a memory storing data that defines a relationship between the inclination angle of the vehicle and a period for applying a voltage to the electric motor, wherein, based on the data stored in the memory, the controller selects the voltage applying period that corresponds to the inclination angle detected by the inclination angle sensor, and sets the selected voltage applying period as the first predetermined period.

5. (Original) The electric parking brake system according to claim 1, further comprising a distance sensor for detecting the traveled distance of the output shaft, wherein the controller causes the drive circuit to supply a voltage to the electric motor such that the frictional member, which is pressed against the rotor, separates from the rotor, and wherein, when the frictional member has moved away from the rotor by a predetermined distance, the controller causes the drive circuit to stop supplying the voltage to the electric motor, so that the frictional member stops applying brake.

6. (Original) The electric parking brake system according to claim 1, further comprising a pulse generator that generates pulses in accordance with rotation of the electric motor, wherein,

to move the frictional member, which is pressed against the rotor, away from the rotor, the controller causes the drive circuit to apply a constant voltage that is opposite from the constant voltage for applying brake to the electric motor until the number of pulses generated by the pulse generator reaches a predetermined number, so that the frictional member stops applying brake.

7. (Currently amended) The electric parking brake system according to claim 1, wherein the vehicle has an electric power source, and wherein the controller causes the drive circuit to perform a PWM control such that the voltage of the electric power source is converted into the constant voltage or the re-pressing voltage.

8. (Currently amended) The electric parking brake system according to claim 7, wherein, when the voltage of the electric power source is less than the constant voltage, the controller sets the duty ratio in the PWM control to 100%, and determines the first predetermined period based on the value of a voltage obtained according to the duty ratio of 100%.

9. (Original) The electric parking brake system according to claim 7, further comprising a warning device for warning an occupant of the vehicle, wherein, when the voltage of the electric power source is less than the constant voltage, the controller activates the warning device.

10. (Currently amended) The electric parking brake system according to claim 1, wherein the second predetermined period is shorter than the [[a]] first predetermined period, and ~~wherein, after the first predetermined period has elapsed, the controller causes the drive circuit to apply a re-pressing voltage, which is determined based on a temperature of the electric motor, to the~~

~~electric motor for a second predetermined period~~ the re-pressing voltage is greater than the predetermined constant voltage.

11. (Currently amended) The electric parking brake system according to claim [[10]], wherein the controller estimates a torque generated by the electric motor under the current temperature, and multiplies the constant voltage by the reciprocal of the ratio of the estimated torque to a referential torque that is generated by the electric motor under a predetermined referential temperature, and wherein the controller sets the resultant of the multiplication as the re-pressing voltage.

12. (Currently amended) The electric parking brake system according to claim [[10]], further comprising:

a current sensor for detecting a value of a current supplied to the electric motor; and

a pulse generator that generates pulses in accordance with rotation of the electric motor;

wherein the controller computes a resistance of the electric motor based on the current value at the time when the pulses stop changing, and wherein the controller estimates the temperature of the electric motor based on the ratio of the computed resistance to a previously stored referential resistance of the electric motor.

13. (Currently amended) A method for controlling an electric parking brake system for a vehicle, wherein the electric parking brake system uses an actuator having an electric motor to press a frictional member against a rotor that rotates integrally with a wheel of the vehicle, thereby applying brake to the wheel with a predetermined braking force, the method comprising:

controlling, when applying the parking brake, a drive circuit to supply a constant voltage to the electric motor for a first predetermined period that is required for the frictional member to generate the predetermined braking force; and

causing the drive circuit to supply a re-pressing voltage, which is determined based on a temperature of the electric motor, to the electric motor for a second predetermined period after the first predetermined period has elapsed.

14. (Currently amended) The control method according to claim 13, further comprising determining the first predetermined period based on a state of the vehicle.

15. (Original) The control method according to claim 14, wherein the state of the vehicle includes an inclination angle of the vehicle.

16. (Currently amended) The control method according to claim 15, further comprising:

detecting the inclination angle of the vehicle;

storing data that defines a relationship between the inclination angle of the vehicle and a period for applying a voltage to the electric motor;

selecting the voltage applying period that corresponds to the detected inclination angle based on the data; and

setting the selected voltage applying period as the first predetermined period.

17. (Original) The control method according to claim 13, further comprising:

detecting the traveled distance of the output shaft;

causing the drive circuit to supply a voltage to the electric motor such that the frictional member, which is pressed against the rotor, separates from the rotor; and

causing the drive circuit to stop supplying the voltage to the electric motor when the frictional member has moved away from the rotor by a predetermined distance, so that the frictional member stops applying brake.

18. (Original) The control method according to claim 13, further comprising:

causing a pulse generator to generate pulses in accordance with rotation of the electric motor;

causing the drive circuit to apply a constant voltage that is opposite from the constant voltage for applying brake to the electric motor until the number of the pulses generated by the pulse generator reaches a predetermined number, thereby moving the frictional member, which is pressed against the rotor, away from the rotor, so that the frictional member stops applying brake.

19. (Currently amended) The control method according to claim 13, wherein the vehicle has an electric power source, and the control method further comprising causing the drive circuit to perform a PWM control such that the voltage of the electric power source is converted into the constant voltage or the re-pressing voltage.

20. (Currently amended) The control method according to claim 19, further comprising:

setting the duty ratio in the PWM control to 100% when the voltage of the electric power source is less than the constant voltage; and

determining the first predetermined period based on the value of a voltage obtained according to the duty ratio of 100%.

21. (Currently amended) The control method according to claim 13, wherein the second predetermined period is shorter than the [[a]] first predetermined period, and ~~wherein the control method further comprising causing the drive circuit to supply a re-pressing voltage, which is determined based on a temperature of the electric motor, to the electric motor for a second predetermined period after the first predetermined period has elapsed~~ the re-pressing voltage is greater than the predetermined constant voltage.

22. (Currently amended) The control method according to claim 13[[21]], further comprising:

estimating a torque generated by the electric motor under the current temperature; and

multiplying the constant voltage by the reciprocal of the ratio of the estimated torque to a referential torque that is generated by the electric motor under a predetermined referential temperature, and setting the resultant of the multiplication as the re-pressing voltage.

23. (Currently amended) The control method according to claim 13[[21]], further comprising:

detecting a value of a current supplied to the electric motor;

causing a pulse generator to generate pulses in accordance with rotation of the electric motor;

computing a resistance of the electric motor based on the current value at the time when the pulses stop changing; and

estimating the temperature of the electric motor based on the ratio of the computed resistance to a previously stored referential resistance of the electric motor.

24. (Currently amended) An electric parking brake system for a vehicle, comprising:

an actuator, which includes an electric motor and an output shaft, wherein the output shaft is reciprocated by the electric motor;

a frictional member, which is capable of approaching and separating from a rotor that integrally rotates with a wheel of the vehicle, wherein the output shaft presses the frictional member against the rotor such that the frictional member applies brake to the wheel with a predetermined baking force;

a drive circuit, which supplies a voltage to the electric motor to drive the electric motor; and

a controller for controlling the drive circuit, wherein, when applying the parking brake, the controller determines a voltage to be supplied to the electric motor based on a state of the vehicle, ~~and wherein the controller~~ and controls the drive circuit to supply the determined voltage to the electric motor for a first predetermined period, and wherein, after the first predetermined period has elapsed, the controller causes the drive circuit to supply a re-pressing voltage, which is determined based on a temperature of the electric motor, to the electric motor for a second predetermined period.

25. (Currently amended) A method for controlling an electric parking brake system for a vehicle, wherein the electric parking brake system uses an actuator having an electric motor to press a frictional member against a rotor that rotates integrally with a wheel of the vehicle, thereby applying brake to the wheel with a predetermined braking force, the method comprising:

determining, when applying the parking brake, a voltage to be supplied to the electric motor based on a state of the vehicle; [[and]]

controlling the drive circuit to supply the determined voltage to the electric motor for a first predetermined period; and

causing the drive circuit to supply a re-pressing voltage, which is determined based on a temperature of the electric motor, to the electric motor for a second predetermined period after the first predetermined period has elapsed.